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FOURTH SERIES

OIL AND GAS DEVELOPMENTS
IN
PENNSYLVANIA
IN
1951

By
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OIL AND GAS DEVELOPMENTS IN PENNSYLVANIA IN 1951

BY

CHAS. R. FETTKE¹

ABSTRACT

Major drilling activities in Pennsylvania during 1951 were confined to the Oriskany sand gas territory of north-central Pennsylvania. The Leidy gas field in Clinton County, discovered early in 1950, underwent intensive development. Fifty-one producing wells with an average initial open flow of 10,000,000 cubic feet of gas per day and 12 dry holes were completed in this field in 1951. At the end of the year, the field extended for a distance of about 9 miles along the trend of the Wellsboro anticline and included 8,400 productive acres. The average rate of production during the year was approximately 150,000,000 cubic feet of gas per day.

Including the Leidy development, 84 deep wells (Middle Devonian or deeper) were completed in Pennsylvania during 1951, as compared with 34 in 1950. Of these, 57 were gas wells and 27 were dry holes. Tests on 5 previously unexplored prominent structures in north-central Pennsylvania were completed. One of these, an Oriskany test, proved successful and will probably lead to the development of another Oriskany sand gas field. Two of the four unsuccessful wells tested the Oriskany; the third continued through the Oriskany to the Albion or Lower Silurian. The fourth represented a Cambro-Ordovician test on a well-defined elongate dome in the closely folded Appalachians of southern Lycoming County.

Exploratory drilling in the shallow-sand territory (Upper Devonian or higher) during 1951 led to the discovery of one small oil pool in southwestern Pennsylvania and one small gas pool in north-central Pennsylvania (both Upper Devonian). The total number of shallow wells drilled was 1,722, essentially the same as in 1950. The Bradford field accounted for 80 per cent of Pennsylvania's oil production during 1951. The average daily oil production for the entire state was 31,094 barrels, as compared with 32,488 barrels in 1950, a decrease of 4 per cent.

Oil production in Pennsylvania during 1951 is estimated at 11,349,000 barrels. There was no change in the price structure. Total gas production in Pennsylvania during 1951 is estimated at about 125,000,000 thousand cubic feet.

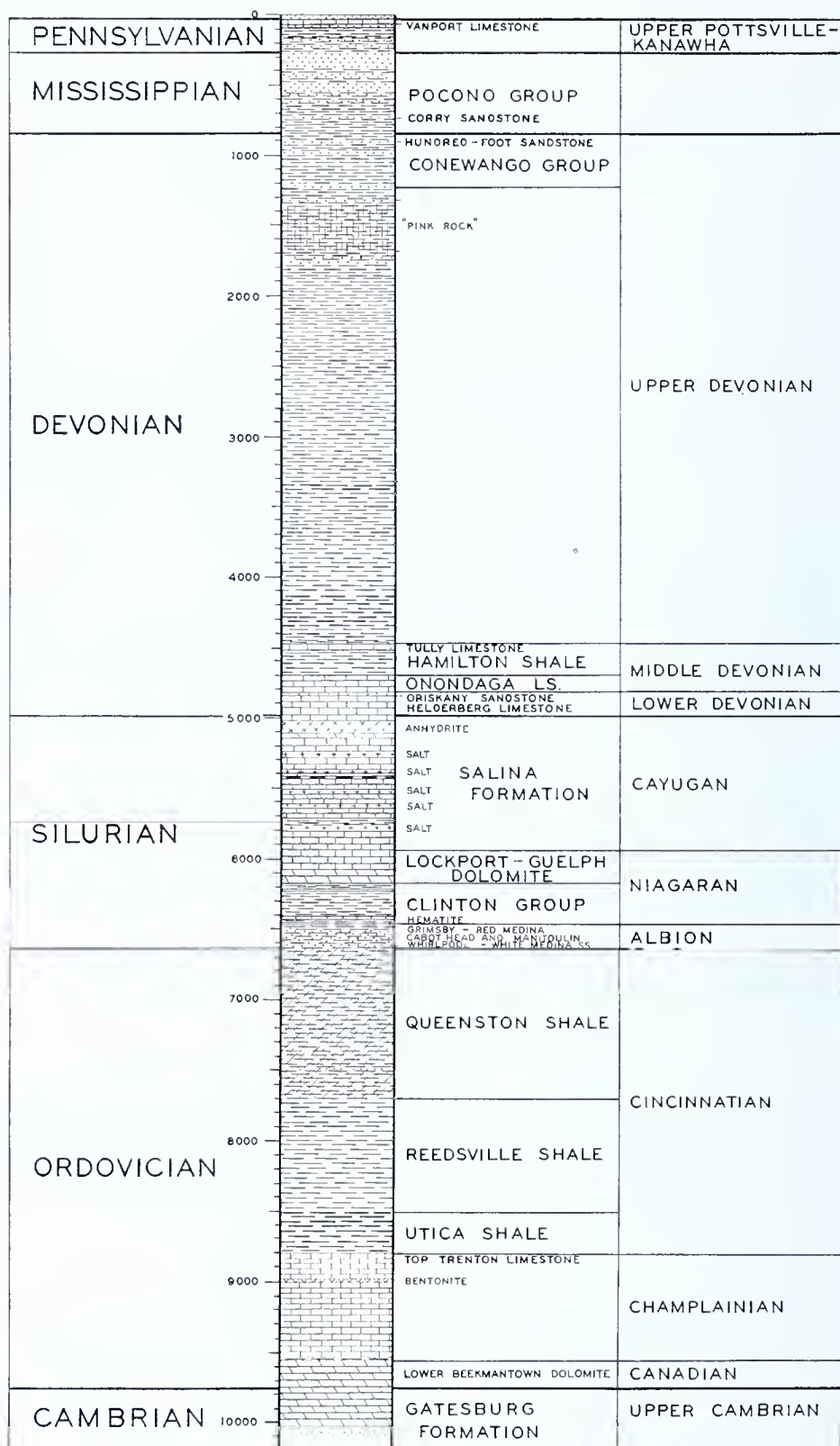
INTRODUCTION

This report summarizes oil and gas developments in 1951 and is the second annual report of this type, the first being Progress Report 135, "Oil and Gas Developments in Pennsylvania in 1950". The summary of deep well records (P.R. 135, table 7 and P.R. 139, table 1) in these annual reports is intended to supplement Bulletin M31, "Summarized Record of Deep Wells in Pennsylvania".

Major drilling activity in Pennsylvania during 1951 was confined to the Oriskany sand gas territory of north-central Pennsylvania. Eighty-four deep wells (Middle Devonian or deeper) were completed in 1951. Fifty-seven of these were gas wells and 27 were dry holes. In the shallow-sand territory (Upper Devonian or higher) 1,722 wells were completed, as compared with 1,724 in 1950. Of these, 238 were gas wells, 22 were

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COLUMNAR SECTION WESTERN PENNSYLVANIA

OBTAINED IN JESSIE G HOCKENBERRY WELL NO. 1
MANUFACTURERS LIGHT & HEAT COMPANY
MERCER TOWNSHIP, BUTLER COUNTY, PA.

oil wells, and 103 were dry holes. Eighteen were drilled for gas storage and 1,341 were drilled in connection with secondary-recovery oil operations.

DEEP-SAND DEVELOPMENTS

Summarized records of the deep wells completed in north-central and western Pennsylvania during 1951 are assembled in Table 1. The locations of the wells are shown on the maps in Plates 1 and 2, and the stratigraphic positions of the formations tested in Figure 1. Of the 84 deep wells completed, 57 were gas wells and 27 were dry holes. The annual rate of deep-sand exploration and development since the discovery of the Tioga field in 1930, the first deep-sand field to be opened in Pennsylvania, is shown in Figure 2. Major activity was confined to the Oriskany sand gas territory of north-central Pennsylvania, particularly that in Cameron and Clinton Counties.

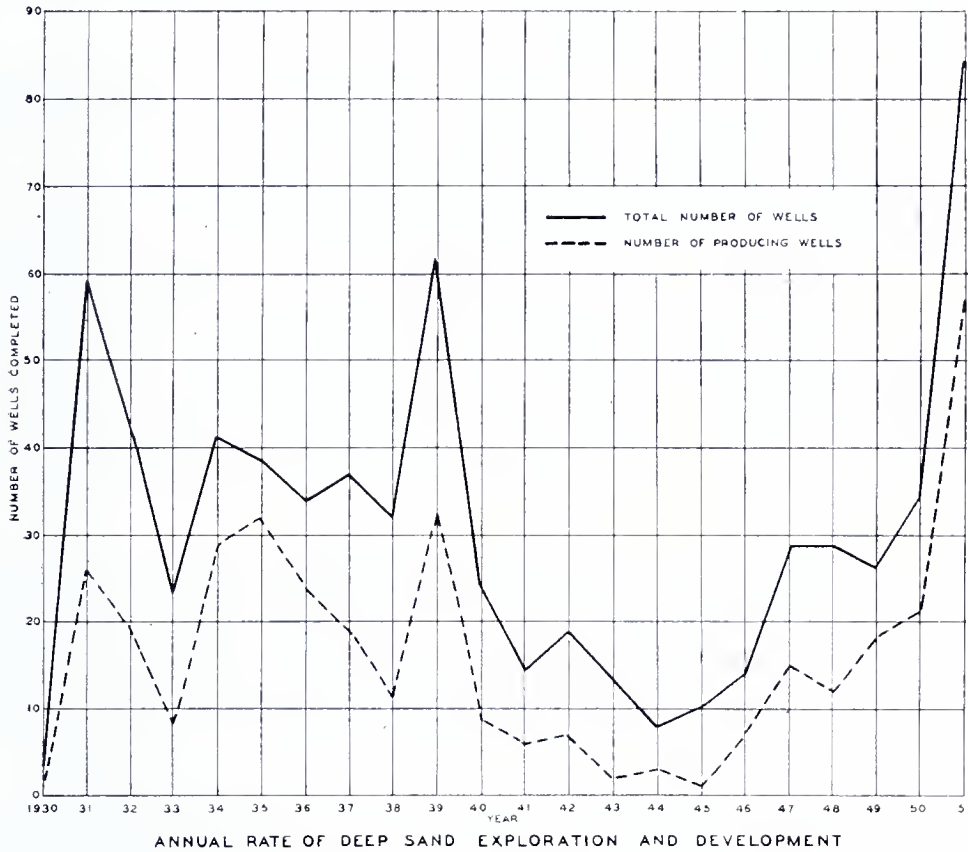


FIGURE 2. Graph showing annual rate of deep-sand exploration and development in Pennsylvania.

The Leidy gas field in Clinton County, discovered early in 1950, underwent intensive development. Fifty-one producing wells with an average initial open flow of 10,000,000 cubic feet of gas per day and 12 dry holes were completed in it in 1951. The initial open flows of the individual gas wells ranged from 400,000 to 145,000,000 cubic feet per day. The H. E. Finnefrock No. 1 well of the New York State Natural Gas Corporation, completed on February 2, 1951, with an initial open-flow capacity estimated at 145,000,000 cubic feet per day, is the largest gas well ever drilled

in the Appalachian area. The Leidy field has now been developed for a distance of about 9 miles along the trend of the Wellsboro anticline and includes 8,400 acres. Limits of production have been established at the southwest end of the trend but not on the northeast. The completion of a large well early in 1952, about 1¼ miles southeast of the limits of the main pool as now developed, indicates the probable existence of a gas-bearing fault block on the southeast flank of the Leidy dome similar to the Meeker block in the old Tioga field. The Leidy field produced at the rate of about 150,000,000 cubic feet of gas per day during 1951. Its life, however, will be relatively short on account of the intensively competitive exploitation that it is undergoing.

In addition to developments in the Leidy area an exploratory well in Cameron County, north-central Pennsylvania, encountered gas in commercial quantity in the Oriskany sandstone underneath the Driftwood dome. This discovery will probably result in the development of another Oriskany sand gas pool during 1952.

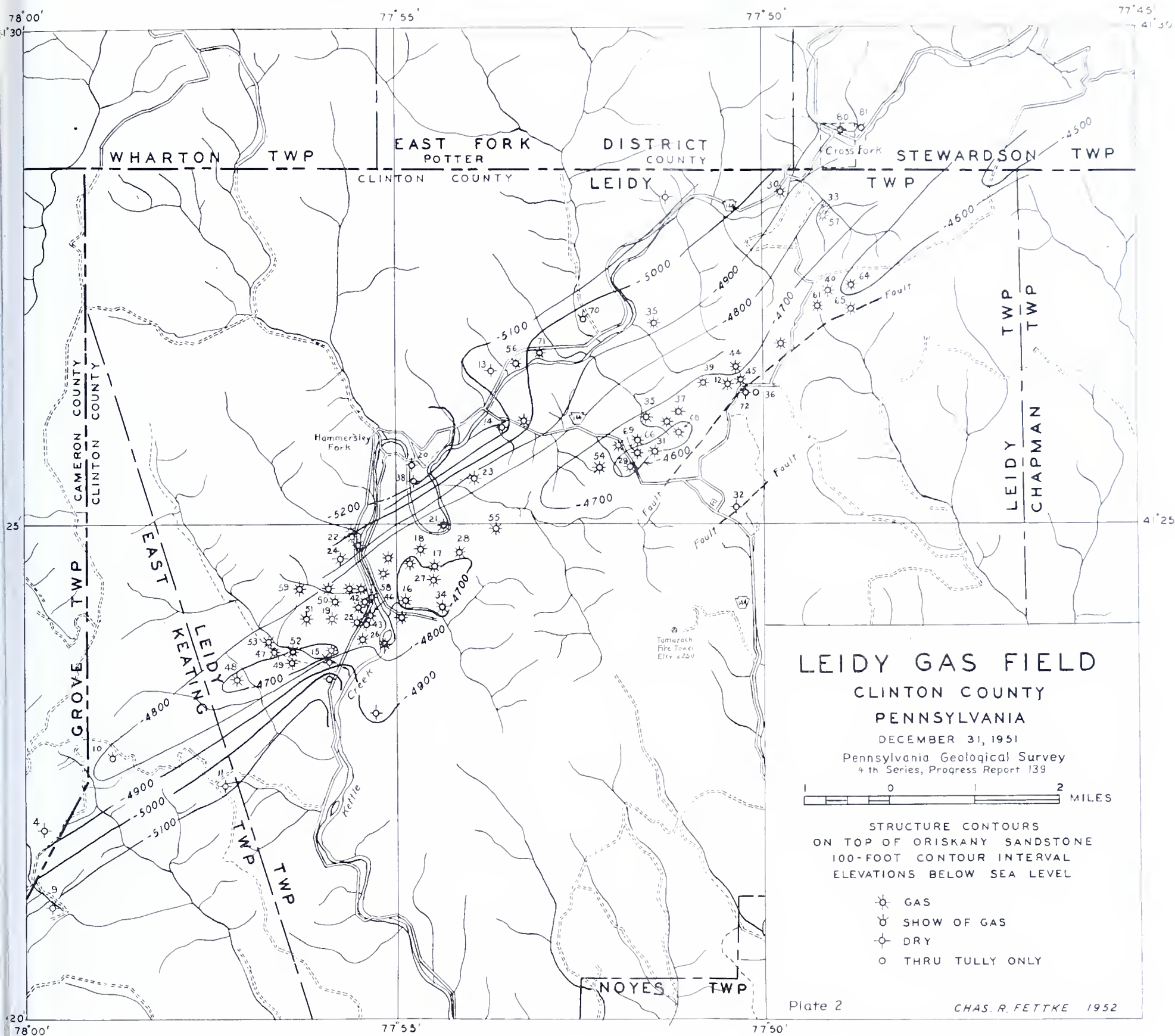
Three additional gas wells were completed in the Corry pool of Erie County; one, in the East Fork-Wharton pool of Potter County; and one in the Piper pool of Westmoreland County. These wells extended slightly the limits of the respective pools in which they are located.

The Hercules Powder Company's No. 1 well in Cameron County encountered little or no sandstone at the Oriskany horizon. It is located on the Emporium dome along the Sabinsville anticline. The test indicates that this prominent structure probably will not prove productive in the Oriskany. The Frank Harman No. 1 well, located on the trend of the Hyner anticline in Clinton County, encountered a fault of small displacement in the Oriskany interval and was dry in this formation. Although the well is located on the axis of the Hyner anticline, it is not on the highest part of the structure. The axis continues to rise at least another 200 feet in a distance of 8 miles to the southwest. The test, therefore, does not condemn the entire structure.

The W. G. Synder No. 1 well in Lycoming County represents a Cambro-Ordovician test on the Nippenose dome, a typical elongate structure in the closely folded Appalachians of central Pennsylvania. The well started near the top of the Beekmantown limestone (Lower Ordovician) and bottomed in the Warrior limestone (basal Upper Cambrian). A small show of gas was reported in the Gatesburg formation of the Upper Cambrian. Acidizing did not increase the flow.

The Arthur Bennett No. 1 well in Sullivan County, which started in the Catskill facies of the Upper Devonian, was abandoned after penetrating Upper Ordovician shales at a total depth of 12,343 feet. It is located on the Muncy Creek anticline, the anticline that bounds the Bernice semi-anthracite coal basin of Sullivan County on the southeast side. No shows of gas or oil were reported. The well, drilled with rotary tools, is the deepest in the Appalachian area.

The Jesse B. Miller No. 1 well, an Ordovician test on the Schellsburg dome in Bedford County in south-central Pennsylvania, which started in the Shriver formation of the Lower Devonian, had reached a depth of 8,979 feet at the end of 1951. A flow of 600,000 cubic feet of gas per day was reported at 8,870 feet in the upper part of the Beekmantown limestone (Lower Ordovician).





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SHALLOW-SAND DEVELOPMENTS

Shallow-sand well completions in western Pennsylvania, exclusive of those drilled in connection with underground gas storage and secondary-recovery oil operations, are shown in Table 2. During 1951, 363 such wells were drilled, of which 66 per cent were gas wells, 6 per cent were oil wells, and 28 per cent were dry holes. The 238 new gas wells had a total initial open-flow capacity of 32,209,000 cubic feet of gas per day, as compared with the total initial open-flow capacity of 59,139,000 cubic feet of the 391 gas wells completed in 1950. The 22 new oil wells had a total initial production of 278 barrels per day, as compared with the total initial production of 191 barrels of the 31 oil wells completed in 1950. The results obtained in 1951 by deepening 37 shallow-sand wells are shown in Table 3. The stratigraphic positions of the Upper Devonian and higher oil and gas sands are shown in Figure 3.

GAS

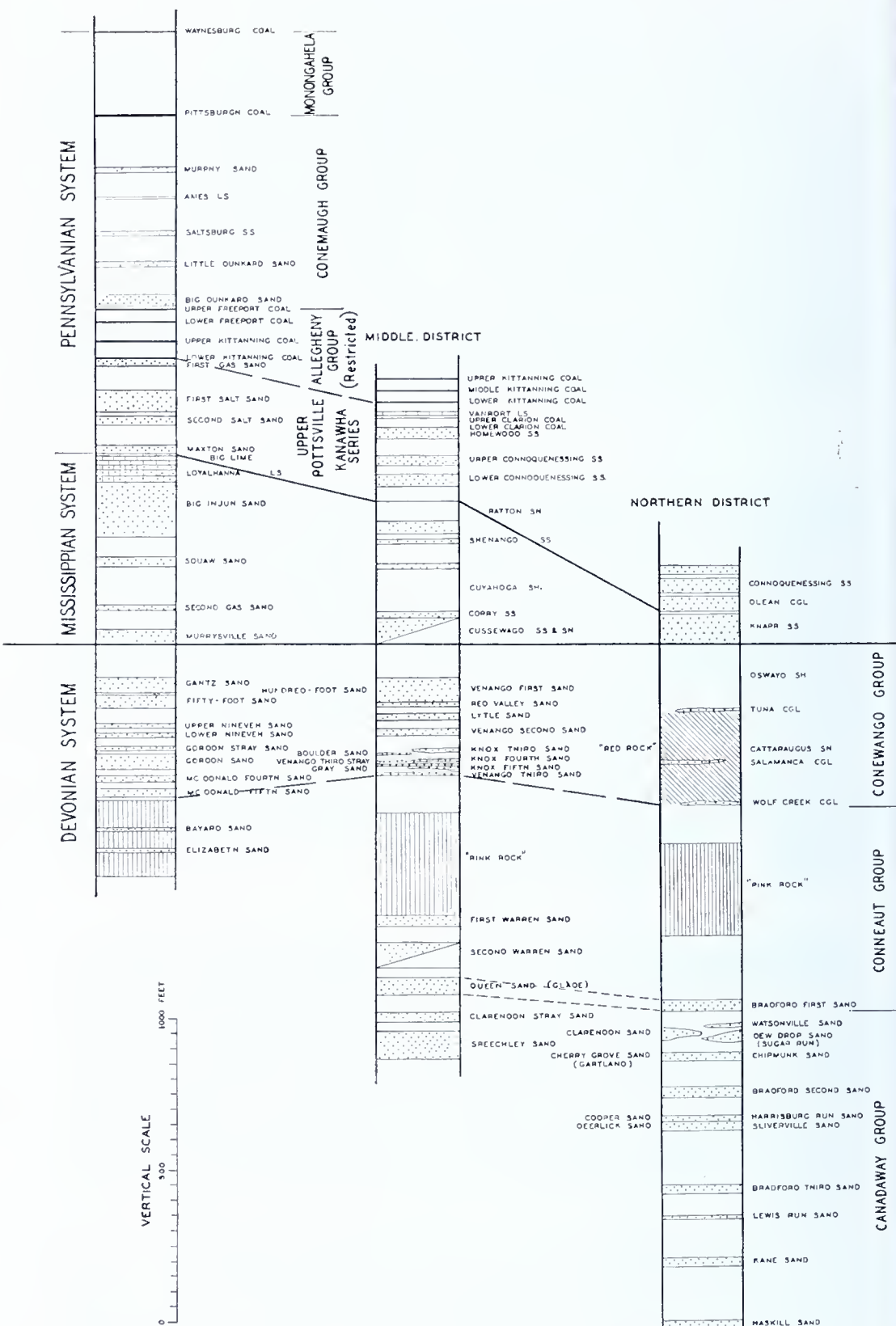
One new shallow-sand gas field was discovered. A well, started as an Oriskany test, encountered a good flow of gas in a shallow Upper Devonian sand near the village of North Bend in Clinton County, which led to a town-lot development. Eighteen gas wells had been completed by the end of 1951 in an area of approximately 260 acres and additional wells were drilling. Initial open flows ranging from one hundred thousand to several million cubic feet of gas have been reported. The wells average 1,450 feet in depth and the reservoir pressure was initially reported to be about 550 pounds per square inch. The field had no outlet at the end of the year. It has been partly delimited by dry holes, which indicate that it is questionable whether it will prove to be of significant size.

Four wells, averaging 2,008 feet in depth, were drilled for underground gas storage in Greene County in 1951; one, 2,899 feet deep, in Jefferson County; 7, averaging 2,769 feet, in Washington County; and 6, averaging 1,460 feet, in Westmoreland County.

OIL

In the Bradford oil field, which includes the Bradford, Guffey, and Burning Well pools, 1,240 new wells were drilled in connection with water-flooding operations, as compared with 1,044 in 1950, an increase of 19 per cent. Oil production in this field, 86 per cent of whose area is in Pennsylvania, decreased from a daily average of 27,314 barrels in 1950 to 26,855 barrels in 1951, or 1.7 per cent. Of the new wells, 1,120 were located in the Pennsylvania part of the field, and this part contributed 24,791 barrels of the daily average production. This represented 80 per cent of the total production of the state. The relations between crude oil prices, production, and drilling activity in the Bradford field are shown in Figure 4.

In the Kane-Clarendon area of southwestern McKean County and eastern Warren County, 108 wells were completed in 1951, mostly in connection with water-flooding projects in the Clarendon pool of east-central Warren County. In the Venango district of Venango and adjacent parts of eastern Forest and southwestern Warren Counties, 113 wells were drilled in 1951 in connection with secondary-recovery oil operations, as



COLUMNAR SECTIONS SHOWING
STRATIGRAPHIC POSITIONS OF OIL AND GAS SANDS
OF WESTERN PENNSYLVANIA



FIGURE 4. Graph showing crude oil prices, production and well completions in the Bradford oil field.

compared with 69 in 1950. Of these, 24 were air- and gas-intake wells, 10 were water-intake wells, and 79 were oil wells. Oil production in the middle and southwestern districts of Pennsylvania decreased from a daily average of 7,714 barrels in 1950 to 6,302 barrels in 1951, or 12 per cent.

A new oil pool was discovered in southwestern Pennsylvania in Elizabeth Township, Allegheny County in 1951 in an Upper Devonian sand, probably the Gantz. The discovery well had an initial production of 150 barrels per day which settled at 35 barrels after the well was placed on production. A second well of about the same size was completed 600 feet from it early in 1952. It is too early to evaluate the significance of the discovery.

OIL AND GAS PRODUCTION

Oil production in Pennsylvania during 1951 is estimated at 11,349,000 barrels, as compared with 11,825,000 barrels in 1950, a decrease of 4 per cent. There was no change in the price structure. The price of crude oil in the northern and middle districts was set at \$4.25 per barrel by the Office of Price Stabilization in December 1950 and in the southwestern district at \$3.82.

Total gas production in Pennsylvania during 1951 is estimated at about 125,000,000 thousand cubic feet as compared with 75,000,000 thousand cubic feet in 1950. The Leidy field accounted for most of the increase.

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Table 1 (1)

COUNTY	Cameron	Cameron	Cameron	Cameron	Cameron	Cameron	Cameron	Cameron	Clinton	Clinton	Clinton
MAP NUMBER	1	2	3	4	5	6	7	8			9
NAME OF WELL	Dodge Lumber Co., No. 1	S. C. Eaton, Jr.	Pardue Estate	State of Penna Tract 1, No. 1	State of Penna Tract 10, No. 1	Hercules Powder Co. No. 1	Frank Harman	John and Helen McGuire Farm	Home wood Hunting Club Inc.		
OPERATOR	Fred Brasley Co.	The Sylva Corp.	Godfrey L. Cabot Inc.	New York State Nat. Gas Co.	New York State Nat. Gas Co.	The Sylva Corp.	Shaw and Smith	John McGuire et al.	Mid Atlantic Oil and Gas Co.		
TOWNSHIP	Gibson	Gibson	Gibson	Grove	Grove	Shippen	Chapman	Chapman	East Keating		
QUADRANGLE	Sinnemahoning	Driftwood	Cameron	Keating	First Fork	Rich Valley	Renovo East	Renovo East	Keating		
LATITUDE	169 mi. N 41° 20'	01 mi. N 41° 20'	108 mi. S 41° 25'	221 mi. N 41° 20'	267 mi. S 41° 30'	04 mi. N 41° 30'	146 mi. S 41° 20'	170 mi. N 41° 20'	140 mi. N 41° 20'		
LONGITUDE	1.16 mi. W 78° 05'	.35 mi. W 78° 10'	08 mi. E 78° 15'	22 mi. E 78° 00'	08 mi. E 78° 05'	104 mi. W 78° 15'	161 mi. E 71° 40'	.76 mi. E 71° 45'	.37 mi. E 78° 00'		
DATE COMPLETED	12-16-51	9-15-51	1-24-51	7-4-51	7-16-51	3-10-51	1-18-51	11-28-51	12-28-51		
ELEVATION	1265	899	1616	1765	1826	1187	635	1580	1503		
BEREA - CORY											
MURRYSVILLE											
TULLY	5370-5486	5145-5243	6105-6202	5792-5920	5556-	4491-4555	5415-	6670-6775	5735-5850		
ONONDAGA	6095-	5857-	6719-6751	6592-	6252-	5091-5120	6430-6474 Fault	6483-6489	6592-		
ORISKANY	6121-6151	5895-5914 Gas	6751-6787 Show of gas	6608-6664	6267-6328	5120-5121	6474-6483 Fault	6489-6520	6615-6645		
SALINA							Shriver 6520-6578				
LOCKPORT											
ALBION											
QUEENSTON											
TOTAL DEPTH	6157	5922	6794	6688	6403	5181	6578	6940	6646		
DEEPEST FORMATION TESTED	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Tully?	Oriskany		
RESULT	Dry	2500 Mcf gas from Oriskany at 3925 psi in 13 hrs	51 Mcf gas from Oriskany after shooting and oxidizing Abd	Dry	Dry	Dry	Dry	Abandoned above Onondaga	Dry		

TABLE 1, SHEET 2

COUNTY	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton
MAP NUMBER	10	11	12	13	14	15	16	17	18								
NAME OF WELL	State of Penna Tract 2, No. 1	State of Penna Tract 3, No. 1	Robert Able (2 Acres)	O F Bottsford	Clyde Brooks	Howard Brooks	Dorcie Calhoun	Dorcie Calhoun	Dorcie Calhoun								
OPERATOR	New York State Nat Gas Co	E P Sheridan Co	John Fox et al	Godfrey L Cabot Inc	Pittsburgh Oil and Gas Dev Co	Mid Atlantic Oil and Gas Co	Leidy Prospecting Co	Leidy Prospecting Co	Leidy Prospecting Co								
TOWNSHIP	East Keating	East Keating	Leidy	Leidy	Leidy	Leidy	Leidy	Leidy	Leidy								
QUADRANGLE	Hammersley Fork	Keating	Tamarack	Hammersley Fork	Hammersley Fork	Hammersley Fork	Hammersley Fork	Hammersley Fork	Hammersley Fork								
LATITUDE	2.71 mi S 41° 25'	2.69 mi N 41° 20'	1.60 mi N 41° 25'	1.76 mi N 41° 25'	1.13 mi N 41° 30'	1.58 mi S 41° 25'	88 mi S 41° 25'	50 mi S 41° 25'	33 mi S 41° 25'								
LONGITUDE	1.02 mi E 78° 00'	2.03 mi W 77° 55'	.48 mi W 77° 50'	1.10 mi E 77° 55'	1.21 mi E 77° 55'	.80 mi W 77° 55'	07 mi E 77° 55'	45 mi E 77° 55'	.26 mi E 77° 55'								
DATE COMPLETED	6-21-51	9-22-51	10-5-51	11-28-51	9-3-51	11-2-51	1-17-51	5-18-51	9-12-51								
ELEVATION	1598	1561	1793	1307	1039	854	1123	1500	1456								
BEREA-CORRY																	
MURRYSVILLE																	
TULLY	5570-5695	5850-	5611-5715	5502-	5339-		4942-5067	5377-	5364-								
ONONDAGA	6360-	6644-	6384-	6325-6352	6127-	5732-	5797-	6177-	6166-								
ORISKANY	6375-6389 Show of gas	6662- SW at 6668	6409- Gas 6411-6419	6352- Show of gas 6354 Show of SW 6357	6160- SW at 6163	5749- SW at 5757	5823- Gas at 5824	6200- Gas 6202-6209	6190- Gas								
SALINA																	
LOCKPORT																	
ALBION	RED MEDINA (GRIMSBY)																
	WHITE MEDINA (WHIRLPOOL)																
QUEENSTON																	
TOTAL DEPTH	6408	6668	6420	6379	6165	5758	5825	6212	6203								
DEEPEST FORMATION TESTED	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany								
RESULT	65 Mcf gas from Oriskany after shooting and acidizing RP 1160 psi Abd	Salt water in Oriskany Abd	8,000 Mcf gas from Oriskany RP 1100 psi in 14 hrs	2 Mcf gas from Oriskany 2 1/2 bblers SW in 5 days	4 bblers SW in 12 hrs in Oriskany Abd	1 bailer SW per hour in Oriskany Abd	7,200 Mcf gas from Oriskany RP 3180 psi in 14 hrs	9,100 Mcf gas from Oriskany RP 1600 psi in 40 hrs	2,390 Mcf gas from Oriskany								

Table 1 (3)

COUNTY	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton
MAP NUMBER	19	20	21	22	23	24	25	26	27
NAME OF WELL	J.D. Calhoun 4	Leah Calhoun 1	Mabel Calhoun 1	Carlson - Lopinsky	Sophie Cole 1	Larl Connell 2	Chas Cross 1	Chas Cross 1	G. Cross 1
OPERATOR	Godfrey L. Cabot Inc	Dorcie Calhoun et al	New York State Nat Gas Co	Keta Gas and Oil Co	New York State Nat Gas Co	New York State Nat Gas Co	Keta Gas and Oil Co	Noyly Dev Co	New York State Nat Gas Co
TOWNSHIP	Leidy	Leidy	Leidy	Leidy	Leidy	Leidy	Leidy	Leidy	Leidy
QUADRANGLE	Hammersley Fork	Hammersley Fork	Hammersley Fork	Hammersley Fork	Hammersley Fork	Hammersley Fork	Hammersley Fork	Hammersley Fork	Hammersley Fork
LATITUDE	112 mi S 41° 25'	70 mi N 41° 25'	.01 mi S 41° 25'	.15 mi S 41° 25'	.52 mi N 41° 25'	.42 mi S 41° 25'	120 mi S 41° 25'	124 mi S 41° 25'	.65 mi S. 41° 25'
LONGITUDE	90 mi W 77° 55'	14 mi E 77° 55'	.52 mi E. 77° 55'	.50 mi W 77° 55'	.90 mi E 77° 55'	61 mi W 77° 55'	.48 mi W 77° 55'	.44 mi W 77° 55'	.40 mi E. 77° 55'
DATE COMPLETED	6-23-51	3-19-51	4-5-51	6-19-51	9-8-51	4-18-51	1-12-51	7-20-51	9-17-51
ELEVATION	1431	911	924	923	1201	1358	904	868	1579
BEREA-CORRY									
MURRYSVILLE									
TULLY	5307-5423	5305-5425	4885-4986	5103-5220	5267-	5450-	4767-4881	4752-4854	5418 -
DNONDAGA	6086-6107	6092-	5650-5682	5880-5906	6085-	6245-	5620-5651	5610-	6255-
ORISKANY	6107- Gas 6109-6112	6121- SW 1/4 6125	5682- Gas	5906- Gas	6097- Gas at 6101	6262- Gas at 6263	5651- Gas	5638- Gas at 5642	6270- Gas
SALINA									
LOCKPORT									
ALBION	RED MEDINA (GRIMSBY)								
	WHITE MEDINA (WHIRLPOOL)								
QUEENSTON									
TOTAL DEPTH	6114	6128	5690	5918	6116	6278	5653	5649	6283
DEEPEST FORMATION TESTED	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany
RESULT	11,000 Mcf gas from Oriskany rose 1375 psi in 1/2 hr	Salt water in Oriskany rose 80 fl overnight	5,247 Mcf gas from Oriskany R.P. 2000 psi in 24 hrs	1,100 Mcf gas from Oriskany R.P. 1410 psi	1,750 Mcf gas from Oriskany R.P. 1600 psi in 40 hrs	1,700 Mcf gas from Oriskany R.P. 1600 psi in 24 hrs	12,000 Mcf gas from Oriskany R.P. 3100 psi	1,800 Mcf gas from Oriskany after shot	1,300 Mcf gas from Oriskany after shot R.P. 855 psi in 40 hrs

TABLE 1, SHEET 4

COUNTY	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton
MAP NUMBER	28	29	30	31	32	33	34	35	36				
NAME OF WELL	Eliz Dougherty	RW Dougherty	Theo Dougherty	HE Finnefrack	Pat Foley	Lester Green	Hedgeland	Lora Jacobus	Chas H Johnson				
OPERATOR	New York State Nat Gas Co.	New York State Nat Gas Co.	Mid Atlantic Oil and Gas Co.	New York State Nat Gas Co.	Shaw and Smith	Reno Oil and Gas Prospecting Co.	Pettigrew and Dostwill	Godfrey L Cabot Inc	Chas E Fraleigh and Associates				
TOWNSHIP	Leidy	Leidy	Leidy	Leidy	Leidy	Leidy	Leidy	Leidy	Leidy				
QUADRANGLE	Hammersley Fork	Tamarack	Tamarack	Tamarack	Tamarack	Tamarack	Hammersley Fork	Tamarack	Tamarack				
LATITUDE	32 mi S 41° 25'	69 mi N 41° 25'	1.87 mi S 41° 30'	.85 mi N 41° 25'	.19 mi N 41° 25'	2.04 mi S 41° 30'	.88 mi S 41° 25'	2.31 mi N 41° 25'	1.53 mi N 41° 25'				
LONGITUDE	.12 mi E 11° 55'	1.56 mi W 71° 50'	.25 mi E 77° 50'	1.38 mi W 77° 50'	36 mi W 11° 50'	.76 mi E 77° 50'	50 mi E 77° 55'	1.37 mi W 77° 50'	.13 mi W 77° 50'				
DATE COMPLETED	4 - 26 - 51	11 - 21 - 51	8 - 4 - 51	2 - 2 - 51	6 - 16 - 51	4 - 16 - 51	12 - 16 - 51	5 - 28 - 51	5 - 7 - 51				
ELEVATION	1642	1615	1030	1736	1710	1165	1355	1292	1753				
BEREA - CORRY													
MURRYSVILLE													
TULLY	5491 - 5602	5404 - 5501	5148 - 5240	5536 - 5640	5956 -	5158 -	5229 - 5343	5371 -	5935 - 6039				
ONONDAGA	6319 - 6346	6187 -	5963 -	6320 - 6336	7021 -	5961 -	6024 -	6194 -					
ORISKANY	6346 - 6360 Gas	6209 - Gas	5974 - Gas 5974 - 5978	6336 - Gas	7037 - S W at 7043	5984 - Gas at 5985	6042 - Gas	6211 - Gas 6214 - 6215					
SALINA													
LOCKPORT													
ALBION													
QUEENSTON													
TOTAL DEPTH	6360	6223	5989	6339	7044	5986	6051	6230	7172				
DEEPEST FORMATION TESTED	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Tully				
RESULT	3,174 Mcf gas from Oriskany R.P. 1825 psi in 16 hrs	22,500 Mcf gas from Oriskany R.P. 1010 psi in 17 hrs.	1,100 Mcf gas from Oriskany R.P. 2780 psi in 40 hrs	145,000 Mcf gas from Oriskany R.P. 3650 psi in 24 hrs	Salt water in Oriskany rose 300 ft in 2 days	2,274 Mcf gas from Oriskany R.P. 3300 psi	6,270 Mcf gas from Oriskany R.P. 2000 psi in 4 hrs	1,262 Mcf gas from Oriskany after shot R.P. 2600 psi	Abandoned above Onondaga				

Table 1 (5)

	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton
MAP NUMBER	37	38	39	40	41	42	43	44	45			
NAME OF WELL	Alex Kelly New York State Nat Gas Co.	Keystone Hunting Club Dorcie Calhoun et al	Lewis Kunkle New York State Nat. Gas Co.	JJ Leban Godfrey L Cabot Inc	Josephine McCoy John Fox et al	Lela McCoy New York State Nat Gas Co	Vernon McCoy Roeder and White	John G Miller New York State Nat. Gas Co	John Myers John Fox et al			
OPERATOR												
TOWNSHIP	Leidy	Leidy	Leidy	Leidy	Leidy	Leidy	Leidy	Leidy	Leidy			
QUADRANGLE	Tamarack	Hammersley Fork	Tamarack	Tamarack	Hammersley Fork	Hammersley Fork	Hammersley Fork	Tamarack	Tamarack			
LATITUDE	1. 33 mi. N 41° 25'	.46 mi. N 41° 25'	1. 64 mi. N 41° 25'	2. 69 mi. N 41° 25'	.86 mi. S 41° 25'	.88 mi. S 41° 25'	1.19 mi. S 41° 25'	1.80 mi. N 41° 25'	1.60 mi. N 41° 25'			
LONGITUDE	1.09 mi. W 77° 50'	.15 mi. E 77° 55'	.76 mi. W 77° 50'	.74 mi. E. 77° 50'	.29 mi. W. 77° 55'	.34 mi. W. 77° 55'	40 mi. W. 77° 25'	.40 mi. W. 77° 50'	.24 mi. W 77° 50'			
DATE COMPLETED	7-17-51	5-24-51	7-19-51	5-12-51	8-1-51	8-6-51	8-21-51	10-18-51	8-25-51			
ELEVATION	1610	913	1675	1744	875	933	863	1716	1741			
BEREA - CORY												
MURRYSVILLE												
TULLY	5423-5530	5292 -	5481-5590	5530-5647	4755-4869	4802-4925	4717 -	5573-5688	5574-5680			
ONONDAGA	6233-6255	- 6125	6297-6310	6329 -	5576-5600	5625 -	5572 -	6410 -	6364 -			
ORISKANY	6255 - Gas 6257-6264	6125 - SW of 6130	6311 - Gas 6318-6327	6354 - Gas 6356-6358	5600 - Gas	5638 - Gas	5587 Gas	6422-6452 Gas	6383 - Gas			
SALINA												
LOCKPORT												
ALBION												
QUEENSTON												
TOTAL DEPTH	6267	6137	6327	6360	5602	5659	5619	6453	6385			
DEEPEST FORMATION TESTED	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany			
RESULT	3,900 Mcf gas from Oriskany R P 1720 psi in 24 hrs	Salt water in Oriskany rose 100 ft in 12 hrs	5,750 Mcf gas from Oriskany R P 1775 psi in 40 hrs	12,500 Mcf gas from Oriskany R P 2760 psi in 40 hrs	11,600 Mcf gas from Oriskany R P 3100 psi in 10 days	4,500 Mcf gas from Oriskany after shot R P 805 psi in 24 hrs	1,000 Mcf gas from Oriskany after shot	2,300 Mcf gas from Oriskany after shot R P 1300 psi in 24 hrs	40,000 Mcf gas from Oriskany R P 1100 psi in 1 1/2 hrs			

TABLE 1, SHEET 6

COUNTY	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton
MAP NUMBER	46	47	48	49	50	51	52	53	54			
NAME OF WELL	F Pelkey 1	State of Penna Tract 4, No. 1	State of Penna Tract 4, No. 2	State of Penna Tract 4, No. 3	State of Penna Tract 5, No. 1	John Fox et al	John Fox et al	John Fox et al	John Fox et al	State of Penna Tract 5, No. 4	John Fox et al	State of Penna Tract 6, No. 1
OPERATOR	Noyly Dev Co.	New York State Nat. Gas Co.	New York State Nat. Gas Co.	New York State Nat. Gas Co.	John Fox et al	John Fox et al	John Fox et al	John Fox et al	Pipeline Const and Drilling Co.			
TOWNSHIP	Leidy	Leidy	Leidy	Leidy	Leidy	Leidy	Leidy	Leidy	Leidy	Hammersley Fork	Hammersley Fork	Leidy
QUADRANGLE	Hammersley Fork	Hammersley Fork	Hammersley Fork	Hammersley Fork	Hammersley Fork	Hammersley Fork	Hammersley Fork	Hammersley Fork	Hammersley Fork	Hammersley Fork	Hammersley Fork	Tamarack
LATITUDE	1 04 mi. S. 41° 25'	1 47 mi. S. 41° 25'	1 87 mi. S. 41° 25'	1 55 mi. S. 41° 25'	90 mi. S. 41° 25'	1 10 mi. S. 41° 25'	1 44 mi. S. 41° 25'	1 36 mi. S. 41° 25'	.68 mi. N 41° 25'			
LONGITUDE	.34 mi. W 77° 55'	1.45 mi. W 77° 55'	1.72 mi. W 77° 55'	1 21 mi. W 77° 55'	.76 mi. W 77° 55'	1.20 mi. W 77° 55'	1.20 mi. W 77° 55'	1.51 mi. W 77° 55'	2 05 mi. W 77° 50'			
DATE COMPLETED	1 - 17 - 51	5 - 7 - 51	10 - 26 - 51	11 - 29 - 51	6 - 15 - 51	5 - 15 - 51	6 - 8 - 51	11 - 19 - 51	6 - 7 - 51			
ELEVATION	867	1108	1275	1038	1205	1437	932	996	1447			
BEREA - CORY												
MURRYSVILLE												
TULLY	4734-4846	5016-5121	5155-5275	4904-5017	5140-5240	5375-5490	4810-4917	4923-	5243-			
ONONDAGA	5583-	5802-5819	5941-5962	5685-	5925-5944	6158 -	5586 -	5690 -	6069 -			
ORISKANY	5607 - Gas	5819 - Gas of 5820	5962-5979 Gas	5710 - Gas	5944-5960 Gas	6179 - Gas	5599 - Gas	5718 - Gas	6088 - Gas			
SALINA												
LOCKPORT												
ALBION	PED MEDINA (GRIMSBY)											
	WHITE MEDINA (WHIRLPOOL)											
QUEENSTON												
TOTAL DEPTH	5613	5833	5992	5728	5970	6195	5611	5728	6104			
DEEPEST FORMATION TESTED	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany
RESULT	3,000 Mcf gas from Oriskany R.P. 2260 psi in 14 hrs	8,800 Mcf gas from Oriskany R.P. 1935 psi in 14 hrs	1,550 Mcf gas from Oriskany after shot R.P. 700 psi	21,500 Mcf gas from Oriskany in 40 hrs	1,600 Mcf gas from Oriskany R.P. 1420 psi in 20 hrs	4,500 Mcf gas from Oriskany in 14 hrs	17,000 Mcf gas from Oriskany R.P. 1850 psi	1,718 Mcf gas from Oriskany	1,422 Mcf gas from Oriskany R.P. 2000 psi			

Table 1 (7)

MAP NUMBER	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton
55	56	57	58	59	60	61	62	63	Clinton
NAME OF WELL	Clyde Peters I	Clara Sandbach I	D.H. Schoonover I	D.M. Schoonover I	Eva Schoonover I	Adair Smith I	Adair Smith I	Chauncey Summerson I	Clinton
OPERATOR	State of Penna Tract 1, No 1 Pipeline Const and Drilling Co.	Mid Atlantic Oil and Gas Co	Rhoeder and Whale	Godfrey L. Cabot Inc	John Fox et al	Blue Rock Drilling Co.	New York State Nat. Gas Co	New York State Nat. Gas Co.	Clinton
TOWNSHIP	Leidy	Leidy	Leidy	Leidy	Leidy	Leidy	Leidy	Leidy	Clinton
QUADRANGLE	Hammersley Fork	Hammersley Fork	Hammersley Fork	Hammersley Fork	Hammersley Fork	Tamarack	Tamarack	Hammersley Fork	Clinton
LATITUDE	09 mi. S, 41° 25'	2 12 mi. S 41° 30'	.75 mi. S, 41° 25'	.76 mi. S, 41° 25'	.75 mi. S 41° 25'	2.58 mi. N 41° 25'	2 17 mi. N. 41° 25'	1.07 mi. S 41° 25'	Clinton
LONGITUDE	1.10 mi. E 77° 55'	.73 mi. E 77° 50'	.35 mi. W 77° 55'	1.15 mi. W 77° 55'	.73 mi. W 77° 55'	.61 mi. E. 77° 50'	.11 mi. E. 77° 50'	.03 mi. E. 77° 55'	Clinton
DATE COMPLETED	10-2-51	12-20-51	6-30-51	5-29-51	5-30-51	11-12-51	11-28-51	2-27-51	Clinton
ELEVATION	1682	1267	900	1286	1010	1837	1939	934	Clinton
BEREA-CORRY									Clinton
MURRYSVILLE,									Clinton
TULLY,	5515-	5248-	4800-	5315-5437	4990-5107	5637-	5768-	4835-4945	Clinton
ONONDAGA	6402-	6019-	5578-	6096-	5792-5802	6440-	6559-	5654-5680	Clinton
ORISKANY	6428- Gas	6027- Gas at 6028	5611- Gas	6118- Gas	5802- Gas	6452- Gas	6571- Gas	5680- Gas	Clinton
SALINA									Clinton
LOCKPORT									Clinton
RED MEDINA (GRIMSBY)									Clinton
WHITE MEDINA (WHIRLPOOL)									Clinton
QUEENSTON									Clinton
TOTAL DEPTH	6441	6040	5632	6130	5809	6467	6605	5685	Clinton
DEEPEST FORMATION TESTED	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Clinton
RESULT	409 Mcf gas from Oriskany after shot RP 1010 psi in 15 hrs	3,000 Mcf gas from Oriskany RP 2200 psi in 16 hrs	1,300 Mcf gas from Oriskany RP 1200 psi in 12 hrs	2,992 Mcf gas from Oriskany RP 1600 psi	4,000 Mcf gas from Oriskany RP 2000 psi	9,350 Mcf gas from Oriskany RP 1650 psi in 18 hrs	550 Mcf gas from Oriskany after shot RP 1290 psi in 13 hrs	2,250 Mcf gas from Oriskany RP 3420 psi in 40 hrs	Clinton

TABLE 1, SHEET 8

COUNTY	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton	Clinton
MAP NUMBER	64	65	66	67	68	69	70	71	72			
NAME OF WELL	C C Swartz 1	Calvin R Swartz 1	US Lumber Co 1	US Lumber Co 2	US Lumber Co 3	US Lumber Co 4	H.E. Weeks 1	Florence Wykoff 1	Florence Wykoff 1			
OPERATOR	New York State Nat Gas Co	Blue Rock Drilling Co	John Fox et al	John Fox et al	John Fox et al	John Fox et al	John Fox et al	Acme Drilling Co.	Godfrey L Cabot Inc			
TOWNSHIP	Leidy	Leidy	Leidy	Leidy	Leidy	Leidy	Leidy	Leidy	Leidy			
QUADRANGLE	Tamarack	Tamarack	Tamarack	Tamarack	Tamarack	Tamarack	Tamarack	Hammersley fork	Tamarack			
LATITUDE	2.78 mi. N 41° 25'	2.52 mi. N 41° 25'	.96 mi. N 41° 25'	1.20 mi. N 41° 25'	1.04 mi. N 41° 25'	.80 mi. N 41° 25'	2.45 mi. N 41° 25'	1.97 mi. N 41° 25'	1.54 mi. N 41° 25'			
LONGITUDE	1.01 mi. E 77° 50'	.99 mi. E. 77° 50'	1.57 mi. W 77° 50'	1.23 mi. W 77° 50'	1.10 mi. W 77° 50'	1.56 mi. W 77° 50'	2.08 mi. W. 77° 50'	1.69 mi. E. 77° 55'	.21 mi. W. 77° 50'			
DATE COMPLETED	11-29-51	5-18-51	4-19-51	5-25-51	10-4-51	11-30-51	9-20-51	12-18-51	6-14-51			
ELEVATION	1793	1689	1586	1562	1782	1543	999		1745			
BEREA -CORY												
MURRYSVILLE												
TULLY	5560-5650	5508-5625	5384-5503	5367-5475	5551-5663	5319-5444	5175-5281	5155-	5708-5829			
ONONDAGA	6348-	6471-	6185-6201	6185-6206	6336-	6099-	5963-	5907-	6719-6748			
ORISKANY	6363- Gas	6499- Show of gas	6201- Gas	6206- Gas	6364- Gas	6123-	5992-	5932- Gas	6748-6794			
SALINA												
LOCKPORT												
ALBION	RED MEDINA (GRIMSBY)											
	WHITE MEDINA (WHIRLPOOL)											
QUEENSTON												
TOTAL DEPTH	6380	6539	6204	6212	6670	6132	6030	5939	6794			
DEEPEST FORMATION TESTED	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany			
RESULT	8,900 Mcf gas from Oriskany R.P. 1435 psi in 2 hrs.	25 Mcf gas from Oriskany after 5th shot 12.4 hrs.	42,000 Mcf gas from Oriskany R.P. 2675 psi	5,500 Mcf gas from Oriskany R.P. 2325 psi	18,000 Mcf gas from Oriskany R.P. 1215 psi	20,000 Mcf gas from Oriskany R.P. 940 psi	100 Mcf gas from Oriskany R.P. 750 psi	7,000 Mcf gas from Oriskany R.P. 2700 psi	Dry			

Table 1 (9)

COUNTY	Clinton	Crawford	Eric	Eric	Eric	Lycoming	Potter	Potter	Potter
MAP NUMBER	73	74	75	76	77	78	79	80	81
NAME OF WELL	Grant Stout	G. J. Russell	Frank Cooper	C. J. Folette	Hazen Folette	W. G. Snyder	Hiski Rod and Gun Club	John McGuire	Homer Rooney
OPERATOR	Art Kelly Drilling Co.	Russell McConnell	Pennsylvania Gas Co.	Pennsylvania Gas Co.	Pennsylvania Gas Co.	The California Co., et al.	Hiski Rod and Gun Club	Olson and Larson	Renovo Oil and Gas Prospecting Co.
TOWNSHIP	Noyes	Connaut	Wayne	Wayne	Wayne	Limestone	Stewardson	Stewardson	Stewardson
QUADRANGLE	Renovo East	Linesville	Corry	Corry	Corry	Williamsport	Short Run	Tamarack	Tamarack
LATITUDE	1.14 mi S 41° 20'	41 mi N 41° 40'	202 mi S 42° 00'	215 mi S 42° 00'	219 mi S 42° 00'	1.69 mi S 41° 10'	2.80 mi N 41° 30'	1.14 mi S 41° 30'	1.20 mi S 41° 30'
LONGITUDE	1.1 mi E 77° 45'	1.80 mi W 80° 25'	1.51 mi E 79° 45'	1.43 mi E 79° 45'	1.33 mi E 79° 45'	2.10 mi E 77° 15'	1.93 mi W 77° 45'	.98 mi E 77° 50'	1.19 mi E 77° 50'
DATE COMPLETED	6-5-51	8-20-51	7-12-51	9-21-51	12-27-51	11-6-51	7-10-51	10-10-51	10-2-51
ELEVATION	861	1135	1798	1791	1780	726	1263	1094	1100
BEREA-CORRY									
MURKYSVILLE									
TULLY	6025-	2380-2450	2889-2965	2890-2967	2890-	3655-3723	5245-	5252-	5252-
ONONDAGA		2518-2725	3148-	3145-3360	3136-	6455-	6092-	6068-	6068-
ORISKANY		2725-2750 SW of 2728	No sandstone	No sandstone	No sandstone	6474-	6157-	6084-	Gas
SALINA		Salt 3028-3063							
LOCUSPORT		Salt water at 3687 Rose 3000 ft	6 Mcf gas 4104-4117 45 spf SW per hr 4117-4120	Shaw 45W 4105 23 Mcf gas 4107 Shaw of SW 4140	6 Mcf gas 4102 Hole full SW 4104-4122				
ALBION		3885-3916	Theroid 4331 4343 Red Medina 4348-4396	Theroid 4336 4348 Red Medina 4348-4384	Theroid 4330 4340 Red Medina 4340-4373				
QUEENSTON		3916-4057	4493-4505	4490-4503	4373-4447				
		Shaw 4 gas 3916 3948 Shaw of oil 3948	Gas 4501-4503	Gas 4494-4500	4478-4490 Gas				
TOTAL DEPTH	6962	4500	4534	4509	4500	5808	6496	6167	6095
DEEPEST FORMATION TESTED	Tully	Albion	Albion	Albion	Albion	Galesburg (Lower Cambrian)	Oriskany	Oriskany	Oriskany
RESULT	Abandoned above Onondaga	85 Mcf gas from White Medina after shut in 59 hrs	411 Mcf gas from White Medina after shut in 1000 psi	968 Mcf gas from White Medina N.P. 1040 psi in 13 hrs	1028 Mcf gas from 4395 1036 Mcf gas from 4484-4487	12 Mcf gas 4250-4255 in 13 days in 14 days	Dry	Dry	146 Mcf gas from Oriskany R.P. 1300 psi in 14 hrs

* 15 minute quadrangle

TABLE 1, SHEET 10

COUNTY	Polter	Sullivan	Westmoreland						
MAP NUMBER	82	83	84						
NAME OF WELL	Lester Brown	Arthur W. Bennett	Fred Musnug						
OPERATOR	Chas L. Fralich and Associates	The California Co.	The Peoples Nat Gas Co.						
TOWNSHIP	Wharton	Davidson	Unity						
QUADRANGLE	First Fork	Eagles Mere	Donegal						
LATITUDE	78 mi. S 41° 30'	130 mi. N 41° 20'	110 mi. S 40° 15'						
LONGITUDE	170 mi. E 78° 05'	80 mi. W 76° 30'	154 mi. W 79° 20'						
DATE COMPLETED	5-11-51	12-7-51	6-30-51						
ELEVATION	1025	1478	2100						
BEREA - CORRY									
MURRYSVILLE									
TULLY	4698-4790	6705-	7225 -						
ONONDAGA	5390-5404	8376 -	7980- Top of crest 8003 Gas						
ORISKANY	5404- Gas	8664-8678 Hard and tight, Dry	8150- Show of gas						
SALINA									
LOCKPORT									
ALBION	RED MEDINA (GRIMSBY) WHITE MEDINA (WHIRLPOOL)								
QUEENSTON									
TOTAL DEPTH	5425	12,343	8330						
DEEPEST FORMATION TESTED	Oriskany	Albion	Oriskany						
RESULT	982 Mcf gas from Oriskany after shot RP 3175 psi in 40 hrs	Dry	7,194 Mcf gas from Onondaga after shot RP 3675 psi in 24 hrs						

TABLE 2. Shallow-sand well completions in Pennsylvania in 1951*

COUNTY	COMPLETIONS		GAS		OIL		DRY	
	NUMBER OF WELLS	AVERAGE TOTAL DEPTH (feet)	NUMBER OF WELLS	AVERAGE INITIAL OPEN-FLOW (Mc cu. ft. per day)	AVERAGE TOTAL DEPTH (feet)	NUMBER OF WELLS	AVERAGE INITIAL PRODUCTION (barrels per day)	AVERAGE TOTAL DEPTH (feet)
Allegheny	11	2,495	4	46	2,457	2	76	2,204
Armstrong	60	2,945	49	86	2,956	1	1	1,088
Butler	32	1,682	12	89	1,887	14	3	1,415
Clarion	48	1,665	36	144	1,631	0	—	—
Clearfield	7	3,135	1	696	2,426	0	—	—
Clinton	23	1,482	18	350	1,448	0	—	—
Elk	13	2,222	7	97	2,207	0	—	—
Fayette	7	2,534	2	98	2,607	0	—	—
Forest	5	1,910	1	133	1,180	3	25	1,900
Greene	9	1,791	4	77	2,467	0	—	—
Indiana	16	3,134	6	147	3,021	0	—	—
Jefferson	41	2,938	30	62	2,863	0	—	—
McKean	22	2,109	18	65	2,003	0	—	—
Warren	2	2,032	2	62	2,032	0	—	—
Washington	40	2,422	26	186	2,737	2	2.5	2,853
Westmoreland	27	3,109	22	200	3,092	0	—	—
Total	363	2,414	238	135	2,435	22	12.6	1,641
						103		2,523

* Does not include wells drilled in connection with underground gas storage or secondary-recovery oil operations.

TABLE 3. *Shallow-sand wells deepened in 1951*

COUNTY	TOTAL		GAS			DRY	
	NUMBER OF WELLS	AVERAGE AMOUNT DEEPEMED (<i>feet</i>)	NUMBER OF WELLS	AVERAGE INITIAL OPEN-FLOW (<i>M. cu. ft. per day</i>)	AVERAGE AMOUNT DEEPEMED (<i>feet</i>)	NUMBER OF WELLS	AVERAGE AMOUNT DEEPEMED (<i>feet</i>)
Armstrong	11	1,642	10	56	1,651	1	1,546
Butler	6	793	2	17	1,158	4	611
Clarion	4	572	3	65	662	1	300
Greene	3	857	2	32	715	1	1,141
Indiana	3	1,170	3	179	1,170	0	—
McKean	2	550	0	—	—	2	550
Washington	7	582	5	183	687	2	319
Westmoreland	1	1,974	1	191	1,974	0	—
Total	37	1,036	26	96	1,199	11	652